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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,499	07/18/2003	Philip Houghton	14934US01	3801
23446	7590	01/26/2006	EXAMINER	
MCANDREWS HELD & MALLOY, LTD			BRINEY III, WALTER F	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/622,499	HOUGHTON, PHILIP	
	Examiner Walter F. Briney III	Art Unit 2646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 07 November 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-4, 6-15 and 17-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 1-4 and 6-8 is/are allowed.
- 6) Claim(s) 9-15 and 17-22 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claims 9-13 and 17-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Eshmawy et al. (US Patent 6,751,203).**

Claim 9 is limited to a *combined sidetone and hybrid balance apparatus*.

Eshmawy discloses method and apparatus for the production of echo free side tones.

See Abstract. According to figure 4 of Eshmawy a DSP (412) is provided that includes a first signal path including signal f(n) and a second signal path including signal x(n), corresponding to the first and second signals as respectively recited. A certain amount of sidetone is injected into the first signal path by way of side tone generator (418). The generator, although not shown, includes an input for value g_{echo} described in column 4, lines 43-65. The value of g_{echo} swings between 0 and 1 and controls the amount of side tone applied to the first signal path, suggesting its correspondence to the mode input having at least a first state and a second state as claimed. The DSP (412) described by Eshmawy also includes an echo canceller (420) that in combination with the side tone generator (418) composes a reconfigurable filter for modifying both the first signal f(n) and the second signal x(n). When g_{echo} is at a value of 1, sidetone comprising signal

$x(n)$ is fully injected into and combined with signal $f(n)$. When g_{echo} is at a value of 0, only echo cancellation is performed, where the signal $f(n)$ is modified and removed from signal $x(n)$ without any feedback through gain unit (436). Therefore, Eshmawy anticipates all limitations of the claim.

Claim 10 is limited to *the apparatus of claim 9*, as covered by Eshmawy. As noted in the rejection of claim 9, the signals $f(n)$ and $x(n)$ are routed through a DSP, which means they are inherently digital signals. Therefore, Eshmawy anticipates all limitations of the claim.

Claim 11 is limited to *the apparatus of claim 9*, as covered by Eshmawy. The only elements referred to from the disclosure of Eshmawy are those within the DSP, which means the apparatus of Eshmawy corresponding to the apparatus of the claim is contained within a single integrated circuit. Therefore, Eshmawy anticipates all limitations of the claim.

Claim 12 is limited to a *method of operating a combined sidetone and hybrid balance apparatus*. Like in the rejection of claim 9, Eshmawy discloses receiving a first signal $f(n)$ and a second signal $x(n)$. When the value of g_{echo} is at 1, the second signal is modified by the gain unit (422), corresponding to a filtering thereof; the filtered second signal $x(n)$ is combined with the first signal $f(n)$ at combiner (426); and the combined signal is transmitted out on a first output to CODEC (406) while the second signal is transmitted to the speech encoder upon a second output. When the value of g_{echo} is at 0, the first signal $f(n)$ is modified by the echo canceller filter (430) and combined with the second signal $x(n)$ at combiner (434); the first signal $f(n)$ is simply transmitted to the

CODEC (406) via the first output without any modification by the side tone generator (418) and the combined signal $r(n)$ is transmitted to the speech encoder (416) upon the second output. Therefore, Eshmawy anticipates all limitations of the claim.

Claim 13 is limited to *the method of claim 12, as covered by Eshmawy*. The filtering performed by generator (418) and canceller (420) is inherently digital as it is implemented within a DSP. Therefore, Eshmawy anticipates all limitations of the claim. Therefore, Eshmawy anticipates all limitations of the claim.

Claim 17 is limited to *the method of claim 12, as covered by Eshmawy*. Clearly, the gain applied to the second signal $x(n)$ by the gain unit (422) is different than the echo transfer function applied to the first signal by filter (430). Therefore, Eshmawy anticipates all limitations of the claim.

Claim 18 is limited to *the method of claim 12, as covered by Eshmawy*. It is clear that combiner (426) adds side tone, corresponding to adding the first input to the second input. Therefore, Eshmawy anticipates all limitations of the claim.

Claim 19 is limited to *the method of claim 12, as covered by Eshmawy*. As noted in the rejection of claim 11, all cited operations and elements of Eshmawy are contained within the DSP (412), and, therefore, are performed within a single integrated circuit device. Therefore, Eshmawy anticipates all limitations of the claim.

Claim 20 is limited to *a method of operating a combined sidetone and hybrid balance apparatus having a first signal path and a second signal path*. As previously indicated in the rejections of claims 9 and 12, a signal g_{echo} is received, where the signal g_{echo} assumes the values 0 and 1. Both the side tone generator (418) and the echo

canceller (420) are modified according to the signal g_{echo} . When g_{echo} assumes the value 1, sidetone is injected into the first signal $f(n)$ by adding a portion of $x(n)$ dictated by gain unit (422). When g_{echo} assumes the value 0, echo is removed from the second signal $x(n)$ by modifying the first signal $f(n)$ by way of filter (430) without injecting any filter feedback via gain unit (432). Therefore, Eshmawy anticipates all limitations of the claim.

Claim 21 is limited to *the method of claim 20*, as covered by Eshmawy. The signals $f(n)$ and $x(n)$ are routed through a DSP, which means they are inherently digital signals. Therefore, Eshmawy anticipates all limitations of the claim.

Claim 22 is limited to *the method of claim 20*, as covered by Eshmawy. The only elements referred to from the disclosure of Eshmawy are those within the DSP, which means the apparatus of Eshmawy corresponding to the apparatus of the claim is contained within a single integrated circuit. Therefore, Eshmawy anticipates all limitations of the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

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2. **Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eshmawy et al. (US Patent 6,751,203) in view of Lashley et al. (US Patent Application Publication 2004/0052358).**

Claim 14 is limited to *the method of claim 12*, as covered by Eshmawy. It is noted that Eshmawy discloses a digital filter (430) for use in adaptive echo cancellation, however, the structure of the filter is unknown. Therefore, Eshmawy anticipates all limitations of the claim with the exception wherein the filtering uses a finite impulse response filter.

The examiner takes Official Notice of the fact that finite impulse response filters were well known at the time of the invention, and were particularly used for implementing adaptive acoustic echo cancellers like the one disclosed by Eshmawy. As evidence, consider the adaptive acoustic echo canceller of Lashley. Figure 7 clearly depicts that the filter (154) includes a tap-delay line with N taps. As taught by Lashley, the amount of taps is directly proportional to the length of the acoustic echo impulse response. See paragraph 48 and 49. It would have been obvious to implement the adaptive acoustic echo canceller of Eshmawy with the finite impulse response filter as was known in the art, and particularly evidenced by Lashley because Eshmawy simply fails to disclose any other alternative.

Claim 15 is limited to *the method of claim 14*, as covered by Eshmawy in view of Lashley. As suggested in paragraph 49 of Lashley, the amount of taps N is based on the length of the acoustic echo impulse response. Typical values are on the order of 16 to 32 taps. Therefore, Eshmawy in view of Lashley makes obvious all limitations of the claim.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

3. **Claims 1-4 and 6-8 are allowed.**

Claim 1 is limited to a *combined sidetone and hybrid balance apparatus*. As a first matter, the citation of Vijaykumar is clarified in an attached corrected PTO-892. In particular, the date of retrieval has been added to conform with MPEP § 707.05(e).

With respect to the recited claim language, it is still asserted that the concept of programming a computer to perform either echo cancellation or sidetone generation is obvious in view of *The Duplan Corporation v. Deering Milliken, Inc., et al.* 197 USPQ 342 (1977), however, claim 1 further distinguishes over the mere switchable combination of two well known prior art devices. In particular, claim 1 recites the presence of four switches specifically coupled to distinct elements of the combined filter. The Vijaykumar reference simply fails to identify all four switches. At most, three switches may be identified that correspond directly to the recited switches. In particular, the switch for selecting an output on Read data 1 corresponds to the first switch. The switch for selecting an output on Read data 2 corresponds to the third switch. The switch for selecting an input to the memory block corresponds to either the second and fourth switch as it selects an input signal for either the first or second output, but as the claim calls for no less than four switches, it is clear that the Vijaykumar reference fails to

make up for the deficiency of the switchable combination of Marchok and Foster. Thus, claim 1 is allowable over Marchok and Foster in view of Vijaykumar.

Claims 2-4 and 6-8 are dependent on claim 1, and are allowable over Marchok and Foster in view of Vijaykumar for at least the same reasons.

Response to Arguments

Applicant's arguments filed 07 November 2005 have been fully considered but they are not persuasive.

With respect to claim 9, the applicant alleges on page 8 that Eshmawy fails to teach, disclose or suggest a mode input having at least a first and second state, to which the examiner respectfully disagrees. The applicant initially characterizes the DSP as the combined sidetone and hybrid balance apparatus as recited. While this is a fair characterization, it is noted that the preamble does not structurally limit the apparatus, but rather the elements following the transitional phrase "comprising" structurally limit the apparatus. This means that claim 9 merely defines an apparatus comprising a first signal path, a second signal path, a mode input and a reconfigurable filter. Any collection of these elements as arranged intrinsically defines the apparatus claimed, and hence, the applicant's claim interpretation is narrower than the examiner's. As the applicant has not factually shown an error in the examiner's interpretation, the applicant's arguments are moot.

The above considerations notwithstanding, it is noted that nowhere in the applicant's specification is the mode input depicted or disclosed in such detail as to

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differentiate between the instant invention and the prior art. At most the mode input is nominally disclosed on page 5, paragraph 13, as well as the originally filed claims.

The applicant contests that the input as taught by Eshmawy that shows prior art knowledge of a mode input is in reality a feedback. The applicant appears to assume that because the input does not come from a source external to DSP 412 it must be a feedback. However, the original disclosure simply does not suggest that the "mode input" is from an external source. Therefore, as all of the applicant's arguments have been shown to be either moot or unpersuasive, the rejection of claim 9 is maintained.

With respect to claim 12, the applicant alleges on page 9 of the current response that Eshmawy fails to teach, suggest or disclose filtering the second input signal using a first predetermined set of filter coefficients when in a first mode of operation, and filtering the first input signal using a second predetermined set of filter coefficients when in a second mode of operation, to which the examiner respectfully disagrees. Filters 422 and 430 are necessarily different. Filter 422 merely adjusts gain values while filter 430 provides adaptive echo cancellation. In this way, it is clear that each filter comprises respective filter coefficients. The fact that filter 430 adapts its coefficients does not suggest that when used, the coefficients are not predetermined. To the contrary, the method of figure 5 depicts that echo cancellation is performed first in step 512 before updating in step 516. This means that echo cancellation coefficients must be used from a prior update, i.e. "predetermined." Therefore, as all of the applicant's arguments have been shown to be either moot or unpersuasive, the rejection of claim 12 is maintained.

With respect claims 10, 11, 13-15 and 17-22 not specifically addressed supra, the rejections of these claims are maintained for the same reasons as claims 9 and 12.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F. Briney III whose telephone number is 571-272-7513. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SINH TRAN
SUPERVISORY PATENT EXAMINER

WFB